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EXAMINER

MILLER, ROSE MARY

ART UNIT PAPER NUMBER

2856

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/786,794

Applicant(s)

BROOKS ET AL.

Examiner

Rose M Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-58, 84, 105 and 122-141 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-58, 84, 105 and 122-141 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Allowable Subject Matter

2. The indicated allowability of claims 122-141 is withdrawn. Rejections based on a new combination of references follow.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 55-57, 125, and 140 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 55-57 are rejected as being confusing and indefinite. Claims 55-57 recite a long list of "biological structures". Confusion arises from the wording of the claims. Claim 45, from which all of these claims ultimately depend, recites "augmenting at least one function" of the targeted biologic structure. It is unclear how one augments "proteins", "capsule", "carbohydrates", "glycolipids", "endotoxins", "exotoxins" and many others recited in the long list provide. The definition of "augment" is "to make greater". Applicant has defined augmentation as encompassing "beneficial effects on the biologic structure. Such augmenting of functions or enhancing effecting include but are not limited to enhancement of growth, reproduction, regeneration, embryo-genesis, metabolism, fermentation, and the like." What "function" of "carbohydrates" is augmented by the disclosed invention? What "beneficial effects" are produced by placing the "carbohydrates" or "proteins" in resonance? Or how is the "capsule"

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augmented or made greater? The specification is unclear on exactly how each of these recited elements is "augmented" by being placed in a resonant state. Therefore, one of ordinary skill in the art cannot determine how Applicant's invention applies to such "biological structures".

Claim 125 is rejected as being indefinite as the phrase "said contacting" lacks a proper antecedent basis.

Claim 140 is rejected as being indefinite as the phrase "enhancing generation" is unclear. What "generation" is enhanced? From the specification and claim 139, it appears applicant meant to say the germination of the plant was enhanced. For the purposes of applying art, the claim will be treated as if the phrase was --enhancing germination-- instead of the "enhancing generation" now found in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 45-58, 84, 105, and 122-141 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Azure (US 5,908,444)** in view of **Findl (US 4,850,959)** and **Baugh (US 5,935,516)**.

Azure discloses at column 3 lines 19-29, that the application of an alternating electric field at some specific frequency within an applied pulse spectrum excites specific molecular resonance so as to accelerate biochemical processes, and/or excite mechanical vibrations of electrically charged molecules to produce acoustic energy that operates to increase blood flow and membrane permeability (inherently activates an acoustic resonance of the molecules and thereby increases the function of the targeted structure).

Findl teaches at column 3 lines 19-35 that the use of pulses or alternating electric fields, amplitude modulated radio frequency fields, and amplitude modulated ultrasonic vibrations (acoustic vibrations) can be used in place of each other and in place of low frequency electromagnetic fields in order to influence the biological functions of a targeted biologic structure.

Baugh teaches at column 9 lines 6-42 that the introduction of harmonic music in a controlled environment has been found to be particularly beneficial to both plants and animals within the controlled environment. When the music is tuned properly, the sounds of the harmonic music will be tuned to the antenna of the DNA and cellular structure of the cells of the animals and thereby causes a resonance of such cells and alters the vibratory cycle of the cells, leading to the improved health thereof, and leading to the deterioration of abnormal cells.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to augment the function of a targeted biologic structure by placing the structure in a state of resonance as taught by **Azure**, and specifically augmenting the biologic structure by inducing acoustic resonance in the biologic structure, as **Findl** clearly teaches the equivalents of ultrasonic (acoustic) vibrations and alternating electric fields for influencing the biological functions of a structure and **Baugh** clearly teaches that placing a biological structure in a state of acoustic

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resonance improves the health of the biological structure (clearly an indication of augmentation of the functions of the biological structure).

With regards to claim 46, **Azure** clearly discloses the applied energy having a pulse spectrum that excites a specific molecular resonance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply at least one resonant acoustic frequency of the biologic structure to the biologic structure in order to excite the desired acoustic resonance that produces the augmented function.

With regards to claims 47-48, **Azure** discloses applying a spectrum of frequencies to the biological structure in order to excite the molecular resonance. **Azure** discloses the claimed invention with the exception of applying at least a portion of an acoustic signature of the biologic structure or applying at least one substantially complete acoustic signature of the biologic structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply either a portion of an acoustic signature or a substantially complete acoustic signature of the biologic as each structure will have different characteristics and even characteristics which could change during the application of the ultrasound. **Azure** compensates for this by applying a spectrum of frequencies to the biological structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to enhance the output of the apparatus by utilizing a signal consisting of a series of resonance peaks found in the acoustic signature to match the acoustic treatment to the individual structure in order to reduce the complexity of the apparatus and to eliminate the possibility of inducing a harmful resonance within the biological structure.

Azure relates the use of EM energy (electromagnetic energy) to acoustics at column 3 lines 19-29. Briefly, **Azure** teaches that the application of EM energy to a biologic structure results in acoustic energy being produced within the biologic structure. This acoustic energy is a version of the "acousto-EM" signature claimed.

Therefore, with regards to claims 49-51, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize either at least one resonant acousto-EM energy, at least a portion of an acousto-EM signature of the

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biologic structure, or at least one substantially complete acousto-EM signature of the biologic structure in the application in order to induce acoustic resonance as **Azure** clearly teaches using EM energy to produce acoustic energy within a biologic structure. As for the use of either a partial or substantially complete signature, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply either a portion of a signature or a substantially complete signature of the biologic as each structure will have different characteristics and even characteristics which could change during the application of the selected energy. **Azure** compensates for this by applying a spectrum of frequencies to the biological structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to enhance the output of the apparatus by utilizing a signal consisting of a series of resonance peaks found in the acoustic-EM signature to match the acoustic treatment to the individual structure in order to reduce the complexity of the apparatus and to eliminate the possibility of inducing a harmful resonance within the biological structure.

With regards to claims 52 and 53, **Azure** fails to specifically disclose the function being augmented comprising at least one function selected from the group of functions consisting of growth, reproduction, regeneration, embryogenesis, metabolism, fermentation, germination, oxidation or reduction activity, and wound healing. **Azure** broadly discloses treating a whole patient, specifically an HIV infected patient, without specifically indicating the functions being augmented. **Findl** teaches using acoustic energy to augment the function of a liver in a patient and therefore influence the metabolism and other functions of the patient. **Baugh** discloses using acoustic resonances to improve the health of both animals and plants but fails to specifically recite a particular function which is augmented. However, one of ordinary skill in the art would know that an increase in health is related to improved growth, reproduction, regeneration, metabolism, or any combination thereof. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the disclosed system of **Azure** to augment a specific function of the biologic structure if the augmentation of the specific function was the only desired result instead of the overall health of the biologic structure being improved. One of ordinary skill in the art

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would know to correlate a specific resonant frequency or series of resonant frequencies to a desired function such as disclosed by **Findl** in the treatment of a patient's liver.

With regards to claims 54-57, **Azure**, **Findl**, and **Baugh** all disclose treating complete organs or organisms such as human patients, livers, animals (specifically a snake), and plants.

With regards to claim 58, **Azure** discloses the claimed invention with the exception of specifically using acoustic energy and using selected frequencies that augment the targeted biologic structure but have no substantial deleterious effect on nearby, non-resonating structures. For the use of acoustic energy instead of electric energy, please see the rejection of claims 45-46 above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize selected frequencies as one of ordinary skill would not want to damage surrounding tissues or structures. Furthermore, it has been well demonstrated in the art of applying ultrasound or acoustic energy for medical purposes that the use of selected frequencies in combination with focused waves enables a specific area of a biologic structure to be targeted without affecting surrounding structures.

With regards to claim 84, it would have been obvious to one of ordinary skill in the art at the time the invention was made to detect at least one signature of the targeted biologic structure and compare it against a reference or standard signature in order to calibrate the apparatus applying the ultrasound/acoustic energy so that the best results can be obtained from the application of the ultrasound/acoustic energy.

With regards to claim 105, it is inherent in the application of ultrasonic energy to include means for generating an acoustic signal, means for transmitting the acoustic signal to the targeted structure, and means for controlling the power level of the applied ultrasonic signal as it is well known in the art of targeting biologic structures that too high a power level would result in a disruption or destruction of the biologic structure instead of enhancing or augmenting the function of the targeted structure as desired.

With regards to claims 122-123, **Azure** fails to specifically disclose determining at least one first resonant frequency of an aquatic species (or an acoustic resonance frequency profile) and applying said at least one first resonance frequency at a sufficient

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power intensity to cause augmenting to occur. **Azure** clearly discloses the applied energy having a pulse spectrum that excites a specific molecular resonance whereas **Findl** teaches the equivalent of applied electrical pulses and ultrasonic energy for putting a biologic structure into a state of resonance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply at least one resonant acoustic frequency of the biologic structure to the biologic structure in order to excite the desired acoustic resonance that produces the augmented function. And in order to determine the acoustic resonant frequency needed to produce the desired results, one of ordinary skill in the art would have known to determine either the acoustic resonant signature of the targeted species or at least determine the resonant frequency which produces the augmented function desired. **Baugh** teaches at column 9 lines 6-42 that the introduction of harmonic music in a controlled environment has been found to be particularly beneficial to both plants and animals within the controlled environment. When the music is tuned properly, the sounds of the harmonic music will be tuned to the antenna of the DNA and cellular structure of the cells of the animals and thereby causes a resonance of such cells and alters the vibratory cycle of the cells, leading to the improved health thereof, and leading to the deterioration of abnormal cells. And one of ordinary skill in the art would know that an improved health of any animal would lead to the improved growth of said animal, including any aquatic species selected for targeting. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to augment the growth of an aquatic species by determining at least one acoustic resonant frequency of the aquatic species (or animal targeted) and to apply said at least one resonant frequency to augment the growth of the aquatic species as **Azure** clearly teaches the augmentation of an organism by applying energy to the organism and **Baugh** clearly teaches the application of acoustics to increase the health (and therefore the growth) of any animal or plant in a controlled environment.

With regards to claim 124, it is well known throughout the art of acoustic measuring and testing to utilize at least one transducer to transmit the desired acoustic energy to the structure selected.

With regards to claim 125, **Azure** clearly teaches that a spectrum of frequencies can be utilized in order to activate one or more resonant frequencies of the targeted structure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to scan the aquatic species with a range of acoustic frequencies in order to determine the acoustic resonance frequency profile of the aquatic species as one of ordinary skill in the art would recognize the scanning as a well known technique utilized in order to insure the proper frequencies were targeted in order to produce the desired results.

With regards to claim 126, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize at least one second resonant frequency of said aquatic species as every structure, biological and non-biological, has more than one resonant frequency. By utilizing more than one resonant frequency, one of ordinary skill in the art would have enhanced the desired results (or augmentation) with minimal increase in operating cost and equipment.

As for claim 127, it would have been obvious to one of ordinary skill in the art to apply a second resonant frequency at a later time after the aquatic species has grown as one of ordinary skill in the art would have known that as the aquatic species grows, the resonant signature or profile of the aquatic species will have changed. Therefore, one of ordinary skill in the art would have known to monitor the changes in the acoustic resonance profile and to adjust the frequency of the applied acoustic energy in order to sustain the augmentation of the growth of the aquatic species.

As for claims 128, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place at least one transducer in communication with the aquatic species as the system would not be able to apply the desired acoustic frequencies to the aquatic species unless at least one transducer was in communication with the aquatic species. Furthermore, **Baugh** discloses using one or more transducers (speakers 106) to apply desired sounds to the species being augmented by piping the sound into the controlled environment.

As for claim 129, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the at least one transducer in at least one

wall of an enclosure that contains said aquatic species as **Baugh** discloses using one or more transducers (speakers 106) to apply desired sounds to the species being augmented by piping the sound into a controlled environment. One of ordinary skill in the art would have known that the best place to position the at least one transducer would have been in the wall of the controlled environment in order to provide the proper support for said transducer.

With regards to claims 130-131, the increase in the health of the animals and plants in the controlled environment as taught by **Baugh** inherently includes an increase in the survivability and growth rate of the aquatic species as a healthier plant or animal will be better able to survive and grow than a plant or animal not as healthy.

With regards to claim 132, please see the rejection of claims 126 and 127 above.

With regards to claims 133-135, **Baugh** teaches that the use of acoustic resonance will increase the health of any animal. Therefore, the specific augmentation of at least one fish, at least one small-fry fish, or a plurality of fish contained in an enclosure would have been obvious to one of ordinary skill in the art at the time the invention was made as **Baugh** does not differentiate between different animals or different species of animals.

With regards to claims 136, **Azure** fails to specifically disclose determining at least one first resonant frequency of a plant species (or an acoustic resonance frequency profile) and applying said at least one first resonance frequency at a sufficient power intensity to cause augmenting to occur. **Azure** clearly discloses the applied energy having a pulse spectrum that excites a specific molecular resonance whereas **Findl** teaches the equivalent of applied electrical pulses and ultrasonic energy for putting a biologic structure into a state of resonance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply at least one resonant acoustic frequency of the biologic structure to the biologic structure in order to excite the desired acoustic resonance that produces the augmented function. And in order to determine the acoustic resonant frequency needed to produce the desired results, one of ordinary skill in the art would have known to determine either the acoustic resonant signature of the targeted species or at least determine the resonant

frequency which produces the augmented function desired. **Baugh** teaches at column 9 lines 6-42 that the introduction of harmonic music in a controlled environment has been found to be particularly beneficial to both plants and animals within the controlled environment. When the music is tuned properly, the sounds of the harmonic music will be tuned to the antenna of the DNA and cellular structure of the cells of the animals and thereby causes a resonance of such cells and alters the vibratory cycle of the cells, leading to the improved health thereof, and leading to the deterioration of abnormal cells. And one of ordinary skill in the art would know that an improved health of any plant would lead to the improved growth of said plant, including any plant species selected for targeting. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to augment the growth of a plant species by determining at least one acoustic resonant frequency of the plant species and to apply said at least one resonant frequency to augment the growth of the plant species as **Azure** clearly teaches the augmentation of an organism by applying energy to the organism and **Baugh** clearly teaches the application of acoustics to increase the health (and therefore the growth) of any plant in a controlled environment.

With regards to claim 137, **Azure** clearly teaches that a spectrum of frequencies can be utilized in order to activate one or more resonant frequencies of the targeted structure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to scan the plant species with a range of acoustic frequencies in order to determine the acoustic resonance frequency profile of the plant species as one of ordinary skill in the art would recognize the scanning as a well known technique utilized in order to insure the proper frequencies were targeted in order to produce the desired results.

With regards to claim 138, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize at least one transducer and at least one signal generator to perform the frequency sweeping process as such elements are well known throughout the art of acoustic measuring and testing for performing such functions.

With regards to claims 139-140, the increase in the health of the animals and plants in the controlled environment as taught by **Baugh** inherently includes an increase in the germination and growth rate of the plant species as a healthier plant or animal will be better able to survive (or germinate) and grow than a plant or animal not as healthy.

As for claims 141, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place at least one transducer in communication with the plant species as the system would not be able to apply the desired acoustic frequencies to the plant species unless at least one transducer was in communication with the plant species. Furthermore, **Baugh** discloses using one or more transducers (speakers 106) to apply desired sounds to the species being augmented by piping the sound into the controlled environment.

Response to Arguments

8. Applicant's arguments filed 12 May 2003 with regards to the rejection of claims 55-57 under Section 112, second paragraph have been fully considered but they are not persuasive.

Applicant argued the following:

"Applicants first note that all of the structures recited in Claims 55-57 are biologic. With regard to the particular reference to 'cement-cement plate', Applicants note that this refers to the attachment mechanism of, for example, barnacles (see, for example, the Specification at Page 54, lines 24-31). Augmentation (e.g. to cause certain organisms to attach better through their cement) or disruption of the cement is possible according to the techniques of the claimed invention.

With regard to the definition of 'augment' Applicants direct the attention of the Examiner to Page 8, lines 28-31. For the convenience of the Examiner, these lines are reproduced immediately below:

'Augmentation as used herein encompasses beneficial effects on the biologic structure. Such augmenting of functions or enhancing effects include but are not limited to enhancement of growth, reproduction, regeneration, embryogenesis, metabolism, fermentation, and the like.'

Accordingly, Applicants respectfully submit that language used in the Claims is definite and precise."

The Examiner disagrees with Applicants. Specifically, it is unclear how placing any of the following: blood, lens of eye, capsule, spore, shell, cement/cement plate, carbohydrates, lipids, lipopolysaccharides, glycolipids, glycoproteins, chloroplasts,

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endotoxins, and exotoxins, into resonance enhances or produces "beneficial effects" on the biologic structure itself as claimed. Applicant cited a specific section of the specification, specifically page 54, lines 24-31. This citation does not say how the "cement/cement plate" is augmented. In fact, the recitation is how to disrupt the cement plate of barnacles to remove them from the hull of a ship by placing them in resonance. How does placing it into resonance enhance the cement plate? Unless the plate is growing or in the process of being formed, there is no way to "augment" the attachment of the barnacle to the ship by merely placing the cement plate into resonance. Once formed, the cement plate is stagnant and cannot be augmented. How is a carbohydrate or lipid augmented? Or is it the processing of the carbohydrates and lipids that are augmented? These questions and more are why claims 55-57 have been found to be indefinite under Section 112, second paragraph.

9. Applicant's arguments with respect to claims 45-57, 84, and 105 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rose M Miller whose telephone number is 703-305-4923. The examiner can normally be reached on Monday - Friday, 7:30 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 703-305-4705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



RMM
15-Aug-03



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